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Early detection of psychosis; why should we care?

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CHAPTER 6

Improving detection of first episode psychosis by mental health care services using a self-report questionnaire

Running head:
Improving detection of psychosis

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ABSTRACT

OBJECTIVE

To examine the utility of the Community Assessment of Psychic Experiences (CAPE)-42, a self-report questionnaire, to improve detection of first episode psychosis in new referrals to mental health services.

METHOD

At first contact with mental health care services patients were asked to complete the CAPE-42 and were then routinely diagnosed by a clinician. Standard diagnoses were obtained by means of the mini-SCAN.

RESULTS

Of 246 included patients, 26 (10.6%) were diagnosed with psychosis according to the mini-SCAN. Only 10 of them were recognized by clinical routine, and 16 psychotic patients were not properly identified. Using an optimal cut-off of 50 on the frequency or distress dimension of the positive subscale of the CAPE-42 detected 14 of these misdiagnosed patients. The sensitivity of the CAPE-42 at this cut-off point was 77.5 and the specificity 70.5.

CONCLUSION

Systematic screening of patients using a self-report questionnaire for psychotic symptoms improves routine detection of psychotic patients when they first come into contact with mental health services.

Keywords: early detection; schizophrenia; early intervention, duration of untreated psychosis.

INTRODUCTION

Early treatment in first episode psychosis is one of the few available points of intervention to improve prognosis. Duration of untreated psychosis (DUP) is defined as the time interval between the onset of the first psychotic symptoms and initiation of adequate treatment (1). Short DUP has been associated with an earlier and better level of remission (2-4), a better chance of recovery (5), lower relapse rates (6;7), less cognitive deterioration (8), less positive (9-12) and negative symptoms (3;13), and better social functioning (14;15). The results of these studies are not directly comparable because of differences in adjusting to conceivable determinants of DUP, measurement of outcome variables and the fact that the definition of DUP has been operationalized differently. Despite these difficulties in comparing of results, all evidence points in the same direction: a longer DUP is associated with poorer outcomes. DUP seems to be an independent predictor of illness and treatment outcome (16), though the causal nature of this relationship has yet to be established. The most important hypothesis explaining the deleterious effects of a longer DUP is that emergent and active psychosis causes progressive gray matter loss, mainly during the critical period around the first episode (17;18).

An important prerequisite for early treatment is early detection. Over the past ten years specific programs for early detection and treatment of first episode psychosis have been developed with the aim of reducing DUP. These programs – which are probably worthwhile even though there is no firm evidence to support their efficacy (19) - are primarily focused on reducing delay in help-seeking and delay in referral to health services. For example the Scandinavian TIPS study revealed that intensive education of the general public, schools and the primary health care services to help them recognize psychotic symptoms was the key to reducing delay in help seeking and delay in referral by primary care (20;21). Norman et al. describe two components representing DUP; firstly the delay caused by the patients contacting health professionals and secondly the delay caused by services after the first contact has already been made (1). Both of these delay components appear to be of equal importance. Patients who had their first contact with services before the first onset of psychosis had a substantial longer service delay component. This also holds true for those patients who had their first contact around their first onset of psychosis (1). Brunet et al. (22) even describe three components of DUP as: delay in help-seeking, delay in referral and delay in recognition by mental health care services. The delay caused by mental health services was found to account for 35% of overall DUP in a study of 80 participants from the inner city of Birmingham (22). Both Norman et al. and Brunet et al. argue that efforts to minimize effects of DUP should be primarily targeted at a reduction of the service delay. Very recently, a large scale multi-centre study of pathways to care also demonstrated that a substantial proportion of DUP was caused by delay after first contact by mental health care services (23). The evidence suggests that mental health care services do not properly recognize psy-

chosis. We hypothesized 1) that a significant number of patients with a first episode psychosis who are newly referred to mental health care services are not recognized by routine clinical procedures and 2) that use of a self-report questionnaire CAPE-42 will improve recognition of first episode psychosis.

MATERIAL AND METHODS

SUBJECTS

Patients with a first-ever contact with mental health care services in part of the Dutch province of Friesland (catchment area of 300.000 inhabitants) during a period of 18 months (November 2006 - April 2008) were considered for inclusion in the present study. Patients were excluded if they (1) were not between the ages of 18 and 65, (2) were unable to understand and/or speak Dutch, (3) were mentally retarded, (4) did not enter treatment within two months or (5) were clinically diagnosed with a DSM-IV V-code for psychosocial problems. The characteristics of the sample are shown in table 1. During the selected inclusion period of 18 months 1,329 first contact patients were referred to mental health care services. Of them, 372 did not meet inclusion criteria: 7 patients were unable to speak Dutch, 7 patients were excluded because of mental retardation, 23 patients were younger than 18 or older than 65, 257 did not enter treatment after their first visit and therefore no information was collected and 78 patients were clinically diagnosed with a DSM-IV V-code for psychosocial problems only. A random sample of 350 patients was drawn from the 957 patients who met inclusion criteria, and they were invited to participate in the study and provided informed consent. Data for 104 patients were incomplete: clinical diagnoses of 27 patients were not reported, 40 patients did not complete the CAPE-42 (24) and 37 patients refused to be interviewed with the mini-SCAN (25). 246 patients (70%) had complete data. These patients did not differ significantly on gender, age or baseline GAF scores from the total eligible population of 957 patients or from the 104 patients from whom data were incomplete.

ASSESSMENT

Figure 1 shows the consort flow chart. Patients were asked to complete the self report questionnaire Community Assessment of Psychic Experiences (CAPE)-42 (24). In addition to the clinical diagnostic routine outlined by the DSM-IV (26), patients were diagnostically assessed by a research-psychiatrist or psychologist using the mini-Schedule for Clinical Assessment in Neuropsychiatry (mini-SCAN). We selected this instrument as the 'gold standard' for diagnosis (25). Blinding procedures were put in place for all assessments. Clinicians were blinded from mini-SCAN results, researchers were kept blind from clinicians' diagnoses. Both clinicians and researchers were kept blind from CAPE-42 results.

INSTRUMENTS

THE CAPE-42

The Community Assessment of Psychic Experiences (CAPE)-42 is a 42 item self-report questionnaire measuring positive and negative psychotic symptoms and depressive symptoms on a two dimensional scale. The first dimension measures the frequency of symptoms on a four point scale of 'never' = 1, 'sometimes' = 2, 'often' = 3 and 'nearly always' = 4, and the second dimension measures the degree of distress caused by the experience: 'not distressed' = 1, 'a bit distressed' = 2, 'quite distressed' = 3 and 'very distressed' = 4. The total score ranges from 42 to 168 on both dimensions. The positive subscale counts 20 items (range 20 -80 on both dimensions), the negative subscale 14 items (range 14 – 56 on both dimensions) and the depressive subscale 8 items (range 8 – 32 on both dimensions) (24;27-29). The CAPE-42 has been designed to assess lifetime psychotic experiences in the general population.

MINI-SCAN

Patients were diagnostically assessed with the mini-SCAN, a short version of the validated Schedules for Clinical Assessment in Neuropsychiatry (SCAN 2.1) using the same algorithm (30). The mini-SCAN was used as the 'gold standard' for diagnosis in the present study to assess the sensitivity and specificity of the CAPE-42. Like its predecessor the mini-SCAN is a semi-structured diagnostic interview used to establish an axis-1 DSM-IV diagnosis (26). The mini-SCAN has an advantage in offering a more uniformly defined interactive computerized interviewing schedule and a brief time of administration of thirty to sixty minutes.

TRAINING AND RELIABILITY

The diagnostic mini-SCAN interviews were administered by research-psychiatrists and psychologists who are familiar with psychopathology classification systems and were formally trained by the Dutch WHO Centre for Training and Research at the University Medical Center Groningen, Department of Psychiatry. Interviewers were trained in administration techniques and software operating instructions of the software program. Reliability was enhanced by rating videotaped interviews, followed by group reviews of the ratings. Inter-rater reliability for the mini-SCAN was established by a pairwise comparison of 3 raters, all rating the same 15 randomly selected subjects. The mean of the pairwise comparison unweighted kappa score on the diagnostic category appeared to be high (kappa= .87).

STATISTICAL ANALYSIS

We used receiver operator characteristics (ROC) to calculate the maximum AUC defining the best scale and the optimal cut off level on that scale of CAPE-42. The AUC ranges from 0.5 (the discriminatory ability of a test is no better than chance) to 1.0 (perfect discriminatory ability). SPSS (version 15.0; SPSS Inc. Chicago, Illinois, USA) was used to analyze the data.

RESULTS

PATIENT SAMPLE

26 (11%) of the 246 included patients had a psychotic disorder according to the mini-SCAN. 73% of them were males ($n=19$) with a mean age of 33.7 years ($SD=12.6$); women had a mean age of 38.4 years ($SD=13.5$). Only 10 of these 26 patients were diagnosed with a psychotic disorder by the clinician, the other 16 patients were assigned to other diagnoses: mood disorder ($n=7$), anxiety disorder ($n=1$), adjustment disorder ($n=5$), substance related disorder ($n=2$) and impulse control disorder ($n=1$). An overview of mini-SCAN diagnoses versus clinical diagnosis is shown in table 2. Patients detected as having a psychotic disorder by the mini-SCAN did not significantly differ from the undetected patients on gender, age or baseline GAF scores. Using mini-SCAN as the 'gold standard' for psychiatric diagnosis of psychosis, ROC analyses were conducted on the positive symptom subscale scores from the frequency and distress dimensions of the CAPE-42 (Figure 2). The AUC score for the positive subscale from the frequency dimension was .76 and the AUC for the positive subscale from the distress dimension was .66 ($p<.001$).

Figure 1. Flow chart

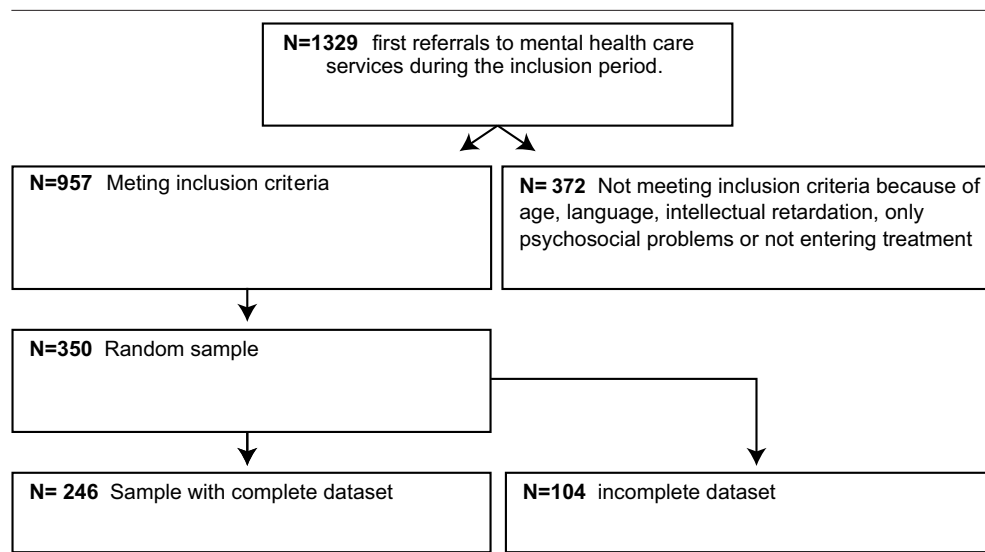


Figure 2. Receiver operator characteristic (ROC) curve for Community Assessment of Psychic Experiences (CAPE) positive subscale frequency and distress dimensions for the mini-Schedule for Clinical Assessment in Neuropsychiatry psychosis. Diagonal segments are produced by ties.

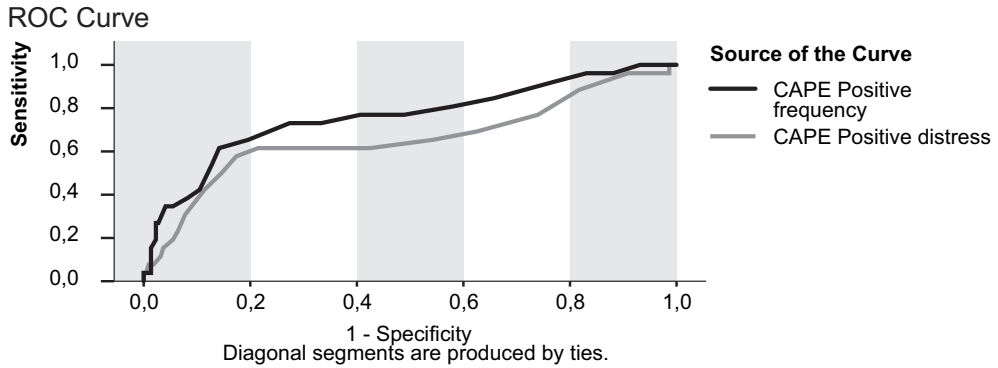


Table 1. Patient characteristics (n=246)

	N	
	mean (SD)	(%)
Gender		
Male	118	(48.0)
Female	128	(52.0)
Age (mean \pm SD)	37.5	(12.7)
Male (mean \pm SD)	37.6	(12.2)
Female (mean \pm SD)	37.3	(12.2)
GAF baseline score (mean \pm SD)	60.3	(8.4)
Employment		
Yes	148	(60.2)
No	95	(38.6)
Unknown	3	(1.2)
Working hours/ week (mean \pm SD)	148	27.9 (14.0)
Living situation		
Living with a partner/ family	115	(46.7)
Living alone	130	(52.8)
Unknown	1	(0.4)

Table 2. Diagnostic distribution; mini-SCAN diagnosis of psychosis versus clinical diagnosis (n=26)

		Clinical diagnosis								
		Psychotic disorder				No psychotic disorder				
		295.9	297.1	298.8	298.9	mood disorder	substance induced disorder	adjustment disorder	anxiety disorder	impulse-control disorder
Mini-SCAN diagnosis	295	0	0	0	3	1	0	0	0	0
	297.1	0	2	0	0	0	0	0	0	0
	298.8	1	0	1	1	1	1	1	0	0
	298.9	0	0	1	1	5	1	4	1	1

Table 3. Different cut-off points on CAPE-42 positive subscale (n=246)

Cut off point on CAPE positive subscale frequency or distress dimension	Sensitivity (%)	Specificity (%)	PPV (%)	NPV (%)
41	100	5.9	11.2	100
43	96.2	16.4	12.0	97.3
45	84.6	33.6	13.1	94.9
48	76.9	57.3	17.5	95.5
50	76.9	70.5	23.5	96.3
52	65.4	84.1	32.7	95.4
54	42.3	87.7	28.9	92.8

PPV = positive predictive value **NPV** = negative predictive value

Table 4. Diagnostic partition of patients (n=246)

	Clinical diagnosis				
	Psychotic disorder		No psychotic disorder		
	mini-SCAN psychotic disorder	mini-SCAN no psychotic disorder	mini-SCAN psychotic disorder	mini-SCAN no psychotic disorder	Total
CAPE-42 score ≥ 50 on positive subscale frequency or distress dimension	6	0	14	65	85
CAPE-42 score < 50 on positive subscale frequency or distress dimension	4	0	2	155	161
Total	10	0	16	220	246

Since the aim of the present study was to improve detection of first episode psychotic patients with a self report questionnaire, sensitivity should be maximized, with as few false positives as possible. Sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV) of the CAPE positive subscale frequency or distress dimension at various cut-off points are presented in table 3. A cut-off score of 50 on the CAPE-42 positive subscale of the frequency dimension or 50 on the positive subscale of the distress dimension with a sensitivity of 77% and a specificity of 70.5% appear to be optimal.

The proportion of patients with CAPE-42 scores above 50 on the positive subscale frequency or distress who are correctly diagnosed with a psychotic disorder (PPV) was 23.5% and the proportion of patients with negative CAPE-42 scores on the positive subscale frequency or distress who are correctly diagnosed as non psychotic (NPV) was 96%. Four of the six patients not detected by CAPE-42 with these cut-off scores were identified by clinical routine. Results are shown in table 4. The clinicians agreed to change the clinical diagnosis into the mini-SCAN diagnosis of a psychotic disorder for all 16 patients who were not properly clinically diagnosed with a psychosis initially.

DISCUSSION

We found that in routine clinical practice patients were not appropriately recognized leaving a substantial number of psychotic patients undetected. We showed that implementation of a self report questionnaire, the CAPE-42, improved recognition of first episode psychotic patients.

The finding that first episode psychotic patients are undetected is in accordance with recently published data reporting a delay in recognition and initiation of adequa-

te treatment of first episode psychotic patients caused by mental health services was reported (23). These findings consistently stress the importance of timely recognition of first episode psychotic patients by mental health care services. In the present study 16 psychotic patients (62% of all psychotic patients) were initially missed by the clinician. A first possible explanation might be that many psychotic patients do not present their psychotic symptoms overtly and clinicians do not thoroughly investigate the possibility of a psychosis as a routine procedure, e.g. in a differential diagnosis. In a recent study we found that about half of the patients presenting at least two specific psychotic symptoms were diagnosed with a non-psychotic disorder and did not receive adequate treatment in accordance with these psychotic symptoms (31). A second explanation might be the lack of revision of diagnostic categorization after diagnosis has once been set. This has also been suggested by Norman et al (1). Systematic initial screening and routine outcome assessment procedures during the course of treatment could help to prevent these flaws in clinical diagnosis. In the present study we used the CAPE-42 as a systematic initial screener. The next step is to define the most useful cut-off score: the lower the cut-off, the more patients will be detected, but the more diagnostic interviews will have to be done. We decided that a CAPE-42 cut-off score of 50 on positive subscale frequency or distress dimension as add on to clinical diagnosis was the optimal threshold to further screening with miniSCAN. But other policy makers could make other choices depending on their aims. E.g. lowering the cut-off score to 41 would include only two extra psychotic patients in our sample, at the expense of 148 extra mini-SCAN interviews (233 instead of 85). At a CAPE-42 cut-off score of 50 on the positive subscale frequency or distress dimension, of 26 psychotic patients, 20 were detected. Of the remaining six patients four were clinically diagnosed with a psychotic disorder.

The six undetected patients all had relatively low scores on the positive dimension, and also lower scores on the negative subscale frequency and distress dimension compared to the 20 patients who were detected by CAPE-42. For the distress dimension this difference was significant ($p=.007$).

The two patients who remained undetected had higher scores on the negative subscale frequency and distress dimension, even though this difference is not significant. These patients might have been assigned to a diagnosis of non-psychotic disorder because of their more prominent negative symptoms and relative lack of positive symptoms.

The incidence of first episode psychosis is relatively low. As a result, relatively large samples of patients would have to be screened to identify new cases of psychosis. However the advantage of screening a population of new referrals with psychiatric problems is considerable; given the risk associated with long treatment delay, the investment seems to be a justified. This study demonstrates once again that the delay within mental health care services should not be underestimated. Psychotic patients appear to be seriously underdetected. More systematic efforts should be

invested in detecting psychotic patients at their first contacts with mental health care instead of emphasizing the importance of detecting psychotic patients hidden in the general population. Systematic screening by a self-report questionnaire, in addition to clinical diagnosis, seems to be an important tool to reduce the duration of untreated psychosis due to mental health care service delay. The CAPE-42 is a self report questionnaire and therefore based on subjective reports. The reliability of self reported psychotic symptoms can be disputed. However previous studies show that self report can be used to assess severity of psychosis in clinical and research settings (32). Moreover patients appear to be more willing to report psychotic symptoms and experiences using self-report questionnaires than in a personal interview (33). A possible limitation of this study is the exclusion of patients with only psychosocial problems, and of patients who were not accepted for treatment within two months which may also explain the relatively large proportion of psychotic patients in our sample (i.e. 26/246). We also included only patients who were able to speak and understand Dutch; findings are not representative for the non-Dutch speaking patients. However the proportion of non-Dutch speaking patients in the areas studied is very low.

It was shown recently by a number of studies that a significant proportion of psychotic patients remain undetected by mental health services. To the best of our knowledge this study is one of the first to examine systematic screening using a self-report questionnaire for psychotic symptoms that shows significant improvement in routine detection of psychotic patients at first contact with mental health services.

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DECLARATION OF INTEREST

None

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